tion extending about halfway up the mountain. On closer examination we noticed that this distortion was moving from west to east at a tremendous rate, still keeping the same height as when first observed. Because of the similarity of the waves in this effect to the heat waves sometimes seen on a hot summer day, we at once concluded that this was a chinook [sic]. The temperature when we first observed the chinook, at 10:30 o'clock, was 4° F.; the succeeding temperatures were as follows:

	°		°
10:33 a. m.	7	12:30 p. m.	26
10:50 a. m.	9	1 p. m.	30
11:05 a. m.	12	2 p. m.	34
11:35 a. m.	19	8 p. m.	33
Noon	22		

While this temperature rise is not as phenomenal as a drop of 40° in 30 minutes, which I observed on February 3, 1917, still it is of vastly more benefit to the stockman. Chinooks which occur here are invariably accompanied by a high wind from the west or northwest. Inasmuch as the generally accepted theory is that these winds come directly from the Pacific Ocean, it would be interesting to learn why only two or three chinooks, at the most, occur during a season in which 90 per cent of the winds are high and from the two above-named directions.

[The date given in this communication was one on which a chinook was blowing over the Big Snowy. There was a sharp rise in temperature amounting to as much as 40° at Havre, Mont., on the morning of December 15. From the observer's position at Lavina the Big Snowy Mountains lie directly northwest and about 20 miles distant, as he states, but without a more precise description of the nature of the distortion in the image of the mountains it is difficult to say whether the warm, dry air of the chinook actually caused it or not. Similar observations in connection with a chinook or a foehn have not come to the bureau's attention.

The present phenomenon accompanied what was undoubtedly a case of the "dry" chinook wind, a wind which is not at all related genetically to the Pacific Ocean, but derives its warm, dry nature from the forced rapid descent along the topography under the compulsion of the existing pressure distribution. See this REVIEW, April, 1907, 35:176, column 2.]

WEATHER BUREAU OBSERVATIONS IN CONNECTION WITH THE SOLAR TOTAL ECLIPSE OF JUNE 8, 1918.

By H. H. KIMBALL and S. P. FERGUSSON.

[Weather Bureau, Washington, D. C., June 19, 1918.]

The Weather Bureau observational campaign related to the solar eclipse of June 8, 1918, was planned by the authors jointly. The studies in radiation were particularly planned and executed by Prof. Kimball; while the general meteorological observations were planned and instructions prepared by Mr. Fergusson.

Radiation observations.—The Weather Bureau observations of radiation were made by Prof. Kimball at the special station established at Goldendale, Wash. (lat. 45° 50′ N.; long. 120° 48′ W.; alt., 1,650 feet[1]). There he installed a Smithsonian pyranometer for measuring the intensity of both the direct solar radiation and the diffuse sky radiation; and also a pyrgeometer of the Ångström type, for measuring the intensity of the outgoing radiation at night and also during totality. Observations with the pyranometer were commenced June 4, 2 p. m., 105th meridian time, and continued at frequent intervals each day until 8 p. m. of June 8. Observations with the pyrgeometer were made each night from June 4–5 to June 9–10; those on the night of June 4–5 continued at frequent intervals from 8 p. m. to 4 a. m., on other nights they were generally made between 8 and 11 p. m. The pyranometer was also employed in measuring outgoing radiation.

Near the radiation apparatus was installed an instrument shelter screening a thermograph, hygrograph, maximum and minimum thermometers. Continuous records of temperature and humidity were obtained from June 4, noon, to June 10, 10 a. m.; and were supplemented by eye readings of an Assmann ventilated and of a sling psychrometer at hourly intervals from 9 a. m. to 6 p. m. each day.

At the same hours a record was made of direction and force of the wind, and the kind, amount, and direction of clouds.

On June 8, for an hour preceding and following the total phase of the eclipse, the wind, cloud, and psychrometer observations were made at 10-minute intervals.

During totality excellent measurements were obtained of the intensity of outgoing radiation.

Meteorological observations.—The program of meteorological observations was based chiefly on certain results of studies by Clayton, Bigelow, and others of the eclipses of May 28, 1900, and August 30, 1905. The field work was limited to observations of atmospheric pressure and temperature, direction of wind, clouds, and shadow-bands. On the day of the eclipse special observations of pressure, temperature, wind, and clouds were made every half hour, beginning at noon and ending with the last regular telegraphic observation of the day. From an hour before until an hour after totality, however, the observations were made every 10 minutes. In order to allow for local changes of any kind, additional observations of wind direction were made at corresponding hours daily from June 3 to 15, inclusive. Pressure observations were careful eye-readings of a mercurial barometer, and wind observations were of a vane reflected in the mirror of a nephoscope, thereby permitting determination of direction to less than 5° of arc.

These observations were made at about 55 stations, nearly all located west of the Mississippi and within the zone of 90 per cent obscuration. Pressure was observed at 45 stations; temperature at 15; clouds at 36; and wind direction at 17.

Continuous records of temperature, pressure, and wind velocity are, of course, available from a number of regular stations of the Weather Bureau within and near the path of totality. Special instructions for observing shadow-bands were sent to many regular and cooperative observers suitably located.

The reports of these special meteorological observations are now coming in rapidly and indicate generally that partly cloudy or cloudy weather prevailed throughout and near the path of totality as far eastward as special observations were made. Probably this condition of the sky seriously interfered with observations of shadow-bands.

[1] Based on local railroad determination.